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Cherry Avenue Bridge
on Ross Creek
Planning Study
consisting of
Final Engineer's Report

September 1981

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SANTA CLARA VALLEY WATER DISTRICT

ROSS CREEK

CULVERT UNDER CHERRY AVENUE

Planning Study
Consisting of the

FINAL ENGINEER'S REPORT

by

Valentine J. Miller, P.E.	Associate Civil Engineer
Randy Talley, P.E.	Senior Civil Engineer
Dr. Bernard Goldner	Environmental Specialist

John L. Richardson
Head, Project Development Branch

John T. O'Halloran
General Manager

George Korbay
Flood Control Manager

September 1981

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TABLE OF CONTENTS

Page

INTRODUCTION 1

- Purpose of Project 1
- Scope of Study 1

SETTING 2

- Historical Summary 2
  - Structures 2
  - Studies 5
- Existing Physical Conditions 5
  - Ross Creek 5
  - Effect of Guadalupe River on Ross Creek 7

PROBLEM DEFINITION 8

- Historical Events 8
- One Percent Event 12

ALTERNATIVE SOLUTIONS 15

- Design Constraints 15
  - Design Flow 15
  - Freeboard 15
  - Maximum Increase in Elevation of Cherry Avenue 15
  - Right of Way 15
- Alternatives 16
  - Alternative 1 - Replace Existing Culvert with Clear Span Bridge 16
  - Alternative 2 - Replace Existing Culvert with Two Box Culverts 16
  - Alternative 3 - Retain and Augment Existing Culvert 19
- Evaluation of Alternatives 19
  - Elimination of Flooding 19
  - Debris Buildup 19
  - Maximum Elevation at Cherry Avenue 22
  - Estimated Costs 22
  - Environmental Impacts 22
- Alternative Selected 23
  - Financing and Scheduling 23

CONCLUSIONS 24

RECOMMENDATIONS 25

LIST OF TABLES

1 Characteristics of Ross Creek Channel 6

2 Physical Dimensions of Culverts on Ross Creek in Study Area 6

3 Comparison of Alternative Projects to Solve Flooding on Ross Creek Upstream of Cherry Avenue 21

LIST OF FIGURES

1 Project Location and Watershed Boundary 3

2 Study Area 4

3 Photographs of Upstream Headwall Fence at Cherry Avenue After Flooding Occurred 9

4 Pattern of Flooding 10

5 Stage - Time Hydrograph of Ross Creek at Streamgage #51 Upstream of Cherry Avenue 11

6 Photographs of Ross Creek Channel Downstream of Cherry Avenue Showing Highwater 13

7 Flood Frequency Curve for Ross Creek at Cherry Avenue 14

8 Alternative 1 - Replace Culvert with Clear Span Bridge 17

9 Alternative 2 - Replace Culvert with Parallel Box Culverts 18

10 Alternative 3 - Retain and Augment Existing Culvert 20

APPENDICES

Appendix A - Costs 27

Appendix B - Categorical Exemption 31

1929 50th Anniversary 1979
Santa Clara Valley Water District

5750 ALMADEN EXPRESSWAY
SAN JOSE, CALIFORNIA 95118
TELEPHONE (408) 265-2600

Honorable Board of Directors
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, California 95118

Dear Board Members:

This is a Final Engineer's report on Proposed Flood Control Measures for Ross Creek at Cherry Avenue. This project is within the city limits of San Jose in the Central Zone of the Santa Clara Valley Water District.

The report identifies and assesses the flooding potential caused by the inadequacy of the Cherry Avenue Culvert. It also presents and evaluates the alternative solutions to the flooding problem and recommends a specific solution for implementation.

The recommended project is the enlargement of the culvert at Cherry Avenue which is presently a bottleneck and which has caused flooding in 1978 and 1980. The channel is also not adequate and will be addressed in a future study. The estimated cost of the recommended project is $258,170 in July, 1981 dollars. The project can be financed from the existing revenues in the Central Zone of the District.

An environmental assessment of the proposed project has determined that there are no substantial adverse impacts. Therefore, a categorical exemption is recommended.

I concur in the project as proposed and recommend that a public hearing be held as a prerequisite to the preparation of the final plans and specifications for construction.

Sincerely yours,

John T O'Halloran
John T. O'Halloran
General Manager

Attachment

30R1210tc-3

AN AFFIRMATIVE ACTION EMPLOYER

INTRODUCTION

This report presents a discussion on a proposed flood control project on Ross Creek at Cherry Avenue.

Purpose of Project

On January 14, 1978 and February 19, 1980, flooding occurred on Ross Creek at Cherry Avenue because the culvert under Cherry Avenue was inadequate to carry the flow in the creek. The purpose of this report is to identify a project which will protect the area around Cherry Avenue from the frequent flooding such as occurred in 1978 and 1980. The project will be designed to be compatible with any type of channel modification chosen in the future for Ross Creek.

Scope of Study

This report describes, in detail, Ross Creek in the vicinity of Cherry Avenue, its location, existing and future channel capacity and historic flooding. Also described in the report are the design flow, alternative solutions, costs for alternative solutions and the recommended project for improvement of the culvert at Cherry Avenue.

SETTING

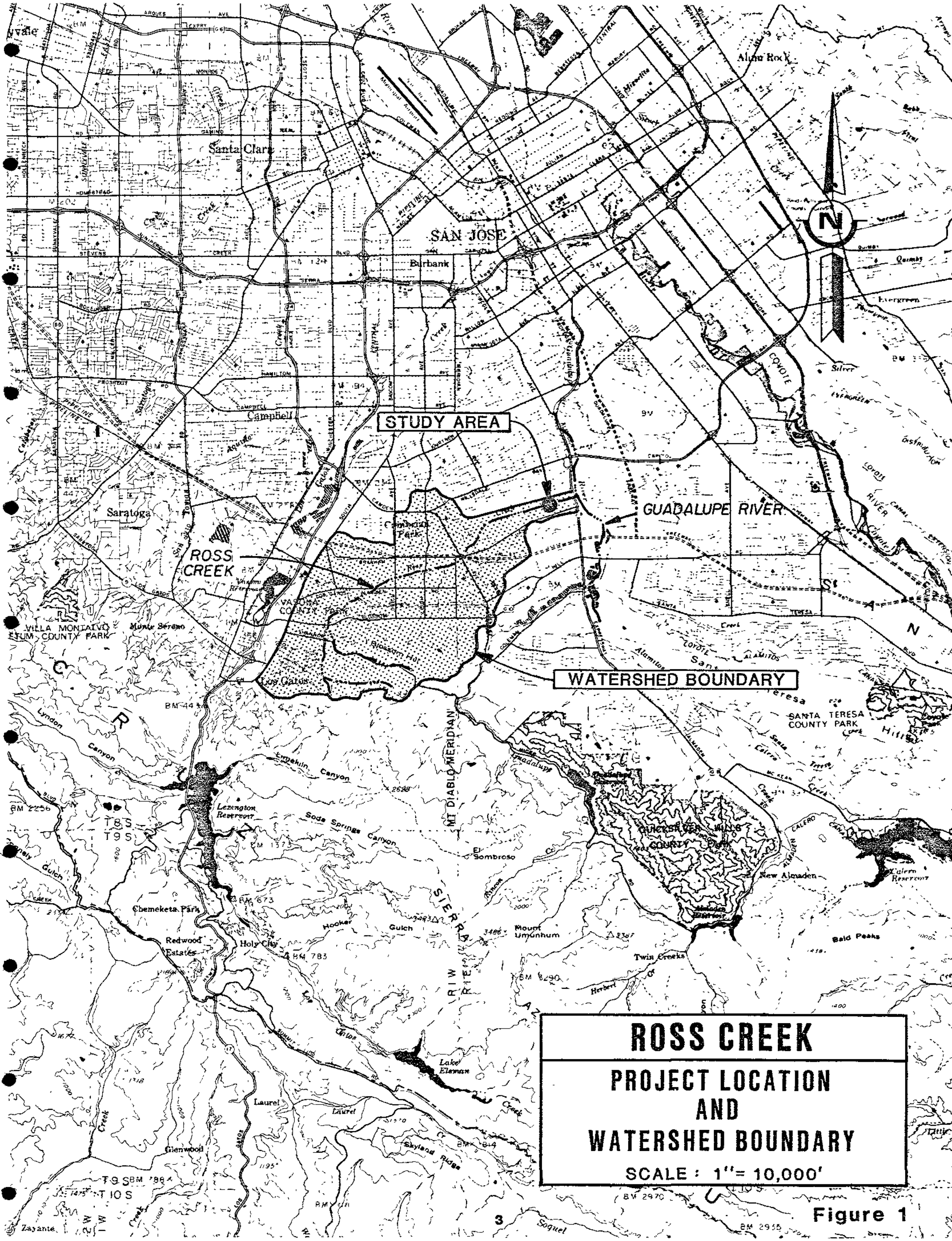
The Ross Creek watershed is shown in Figure 1. This report is concerned primarily with flooding on Ross Creek at the culvert at Cherry Avenue. However, the report discusses that portion of Ross Creek downstream of Jarvis Road and a section of the Guadalupe River that includes the confluence with Ross Creek because conditions in these areas influence conditions at Cherry Avenue. This study area is shown in Figure 2.

Historical Summary

Structures

Originally the portion of Ross Creek in the study area meandered through several orchards before emptying into the Guadalupe River. In June, 1955, the Santa Clara County Flood Control District completed design of channel improvements and culvert installations on Ross Creek between Camden Avenue and the confluence of Ross and Guadalupe Creeks. In the study area, the improvements consisted of straightening and enlarging the channel and constructing the box culverts under the Almaden Expressway and Jarvis Road. The channel design in the study area consisted of a straight excavated earth channel with an 8-foot bottom width, 1.5:1.0 side slopes, a channel slope which ranged from .0020 to .00387 and a minimum depth of 10.0 feet. The right of way was 70 feet wide. The culverts in the study area were reinforced concrete boxes with dimensions of 9.5 feet by 12 feet by 50 feet at Jarvis Road and a 10 feet by 12 feet by 210 feet at Alamden Expressway.

The Cherry Avenue box culvert located between Jarvis Road and the Almaden Expressway was constructed by the City of San Jose in April, 1966. The box culvert is 9 feet high, 12 feet wide and 90 feet long. Streamgage #51 is located just upstream of this culvert.



ROSS CREEK

PROJECT LOCATION AND WATERSHED BOUNDARY

SCALE : 1''= 10,000'

Figure 1

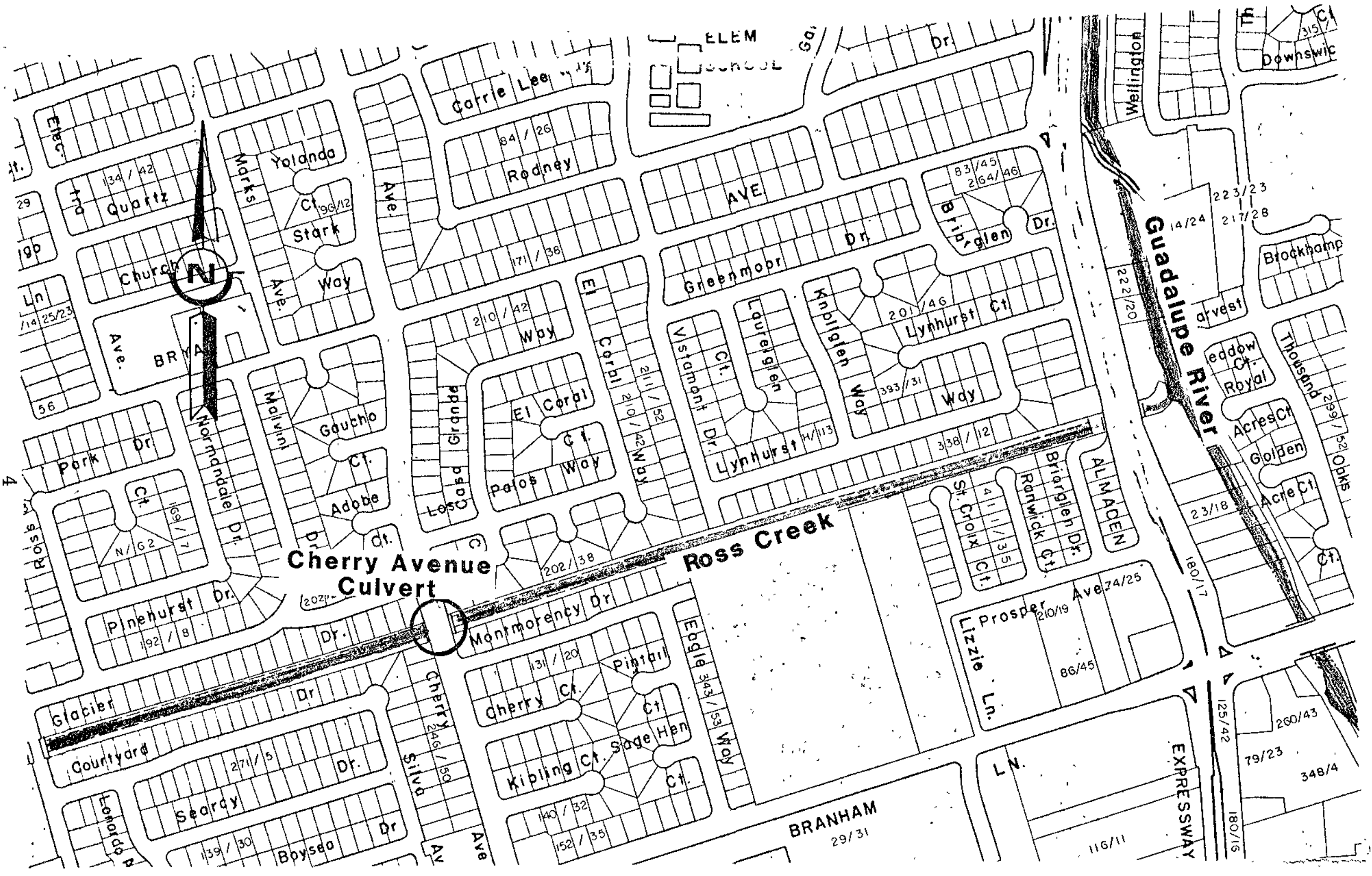


Figure 2

STUDY AREA

LOCATION OF CHERRY AVENUE CULVERT

Studies

The following studies include analysis of conditions in the study area:

1. "Flood Plain Information; Guadalupe River, Santa Clara County, California", San Francisco District Corps of Engineers, January, 1972.

2. San Jose Report of "Flood Insurance Study", George S. Nolte & Associates, May, 1979.

3. "Preliminary Draft Guadalupe River & Adjacent Stream Survey Investigation", San Francisco District Corps of Engineers, June, 1980.

4. "Final Report on Alternatives for Channel Modifications for Guadalupe River from Highway 17 to Blossom Hill Road", August 13, 1979, Koretsky King Division of Anderson-Nichols Company, Inc. This study evaluates several channel modifications in the Guadalupe River which would be intended to enable flood flows to enter the Guadalupe River from Ross Creek.

5. The District has published a "Draft Addendum to the 1976 Ross Creek Hydrology Study", May, 1981. According to this study, the 100-year flow in Ross Creek at Streamgage #51 would be 2,200 cfs. This flow is used as the design flow in this report.

6. The District also published "Ross Creek, Guadalupe River to Camden Avenue, Preliminary Review Report" in March, 1981 which documents the flooding problems on Ross Creek in detail and recommends increasing the capacity of the Cherry Avenue culvert as an immediate interim measure.

Existing Physical Conditions

It is necessary to describe the initial conditions in the study area in order to be able to identify what changes are needed and what the impacts of these changes will be.

Ross Creek

The study area includes 3,530 feet of trapezoidal earth channels in a straight 70-foot-wide right of way. The design characteristics of the Ross Creek channel in this reach are given in Table 1 below. Since the flood control project was constructed in

1955, erosion has reshaped the channel so that the channel is now about 16 feet wide at the bottom and has 1 to 1 side slopes. In some reaches of the channel the toe has eroded to the point where the bank is nearly vertical and in some cases sloughing of the bank has occurred. In other reaches rock riprap or sacked concrete was installed on a maintenance basis to control erosion. The maintenance road alongside the channel is 17 feet wide.

TABLE 1

Characteristics of Ross Creek Channel

	1955 Design	Existing
Shape of channel cross section	trapezoid	trapezoid
Channel bottom width	8 feet	16 feet
Channel side slopes (horizontal:vertical)	1.5 : 1	1.0 : 1
Slope of channel invert	0.002049	0.002049
Minimum channel depth	10 feet	10 feet

There is some low vegetation growing in the channel; Manning's "n" is assumed to be 0.035. If there were no downstream impediments the channel could carry about 1400 cfs at a depth of 10 feet.

The study area includes concrete box culverts under the Almaden Expressway, located at the east end of Ross Creek, and under Cherry Avenue, about 2,440 feet upstream.

TABLE 2

Physical Dimensions of Culverts on Ross Creek in Study Area

Parameter		Culvert	
		Almaden Expy (ft)	Cherry Ave (ft)
Length		210	90
Height		10	9
Width		12	12
Head to force flow through culvert under flow pressure	1100 cfs	2.2	1.9
	2200 cfs	8.6	7.6

Some of the culverts upstream are inadequate and will restrict the flow in Ross Creek in the channel upstream of Cherry Avenue to about 1,100 cfs for almost all flood events.

Effect of Guadalupe River on Ross Creek

The capacity of this reach of Ross Creek is influenced significantly by the water surface elevation in Guadalupe River and the capacity of the culvert under the Almaden Expressway. In the 1% event, the water surface in the Guadalupe River at its confluence with Ross Creek would be 168.4 feet. Under existing conditions, a water surface elevation in the Guadalupe River of 168.4 feet would cause the water surface elevations in Ross Creek to rise high enough to submerge the outlet of the culvert at Cherry Avenue. With its outlet submerged, that culvert experiences pressure flow causing high water levels and possible flooding just upstream of Cherry Avenue.

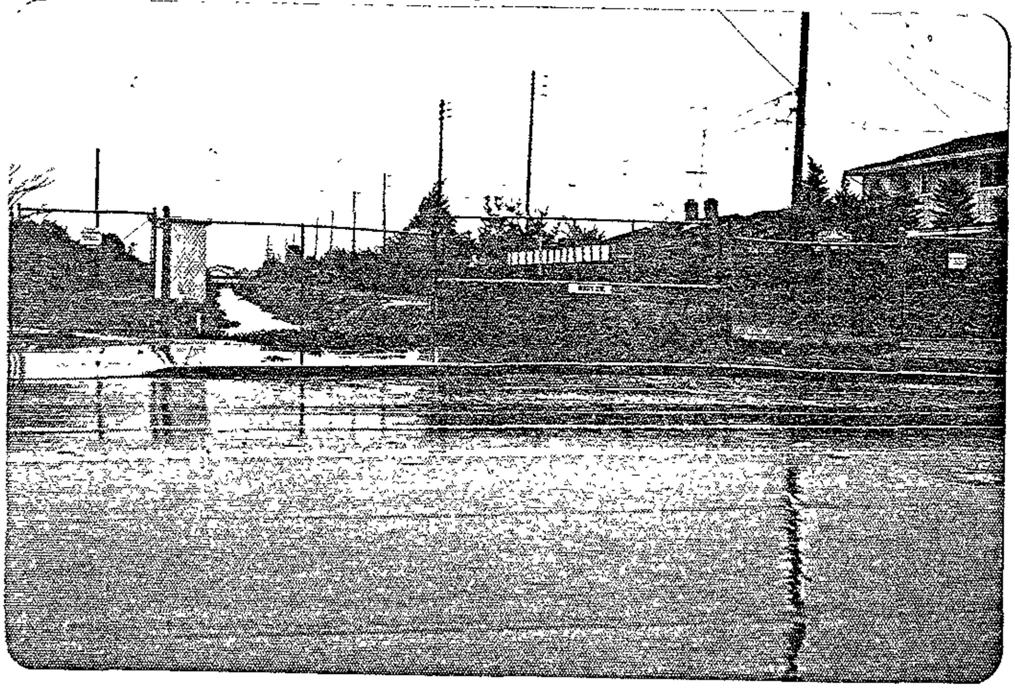
PROBLEM DEFINITION

Historic Events

On January 14, 1978 and February 19, 1980 flooding occurred on Ross Creek at Cherry Avenue. In both cases, flow in the channel upstream of Cherry Avenue was about 1,100 cfs. The existing culvert was inadequate to carry that flow satisfactorily. The flow backed up just upstream of the culvert, raising the water surface elevation to a point where overbanking occurred at a rate of from 100 to 200 cfs. Figure 3 contains a photograph of the upstream side of the Cherry Avenue culvert for each storm; the debris in the fence shows that the water level was at least one foot above the bank. Figure 4 shows the pattern of flooding around Cherry Avenue during the February 19, 1980 storm. Floodwaters covered nearly five blocks along Cherry Avenue and the entire length of Montmorency Drive. Approximately 60 houses were threatened by floodwaters. The depth of flooding at the east end of Montmorency Drive was over two feet and on the verge of entering some of the houses. At least one car was flooded. Many of the residents in the area spent considerable time cleaning up the mud and debris following the storm.

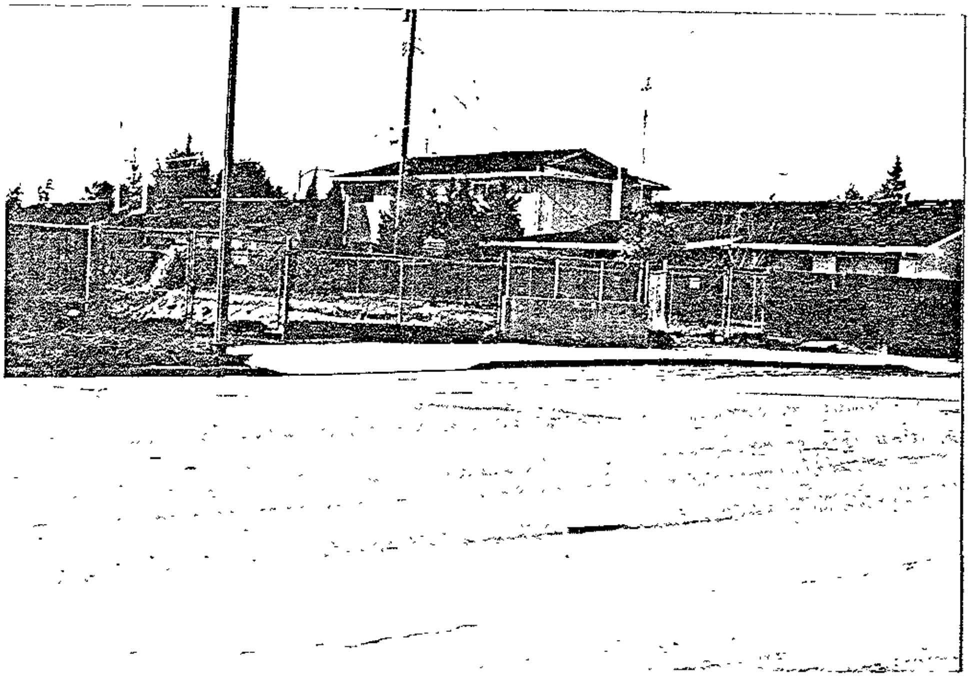
Two differences which can be seen between the conditions at Cherry Avenue during the 1978 and 1980 events are shown in the stage-time hydrographs in Figure 5. These hydrographs were obtained from Streamgage #51 which is in Ross Creek about a hundred feet upstream of Cherry Avenue. This hydrograph shows that, during the more severe February, 1980 storm (approximately a 10-year event), the time during which flooding occurred was longer. This is usually the case; the more severe, less frequent flood event will have a longer duration of flooding.

Figure 3



Photograph 1

January 14, 1978 storm at Cherry Avenue with streamgage #51 in background. Note debris line in fence



Photograph 2

The upstream headwall fence at Cherry Avenue after the February 19, 1980 storm. Note the high water debris line clearly visible in fence.

Pattern Of Flooding

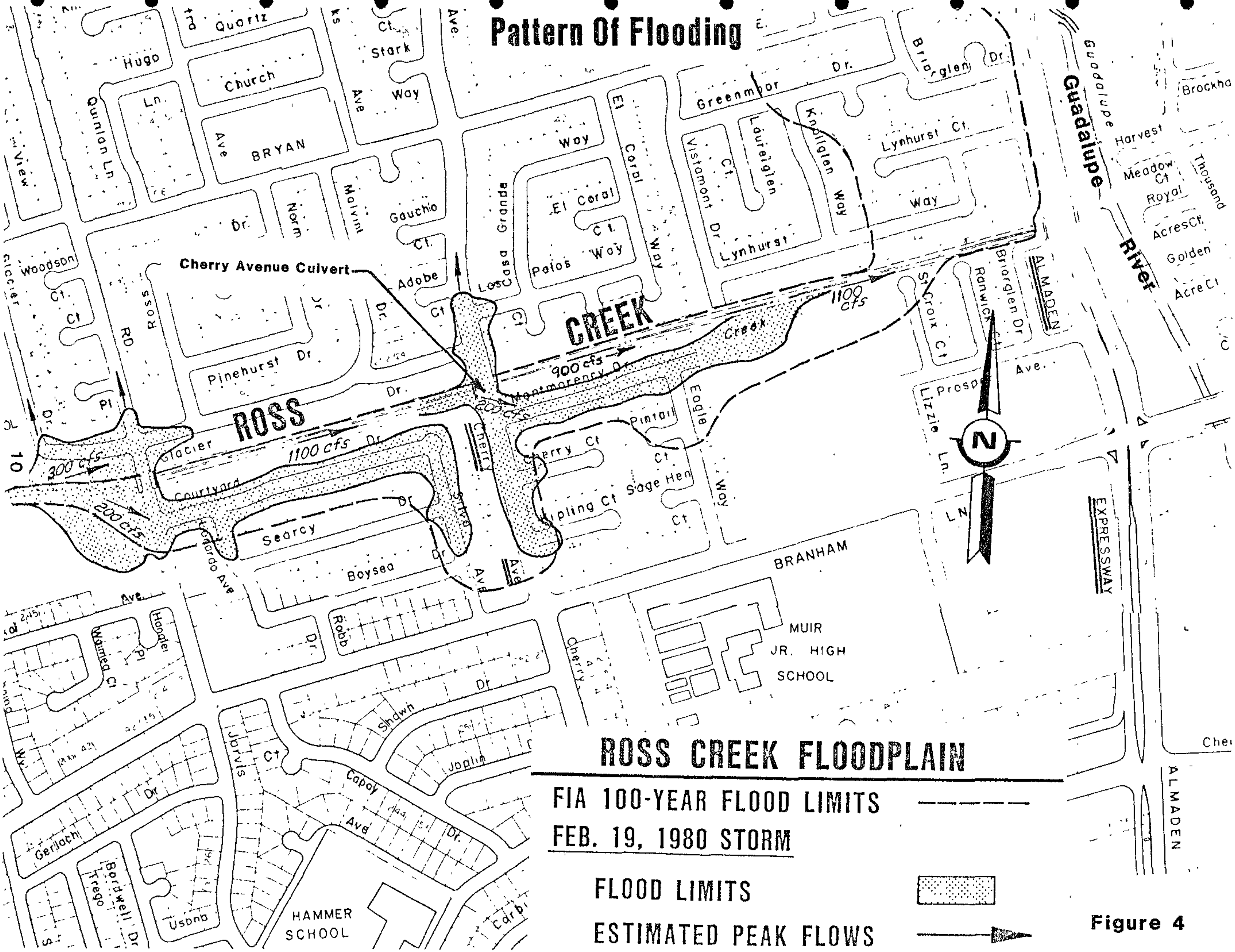


Figure 4

STAGE TIME HYDROGRAPHS FOR ROSS CREEK
AT GAGE # 51 UPSTREAM OF CHERRY AVENUE

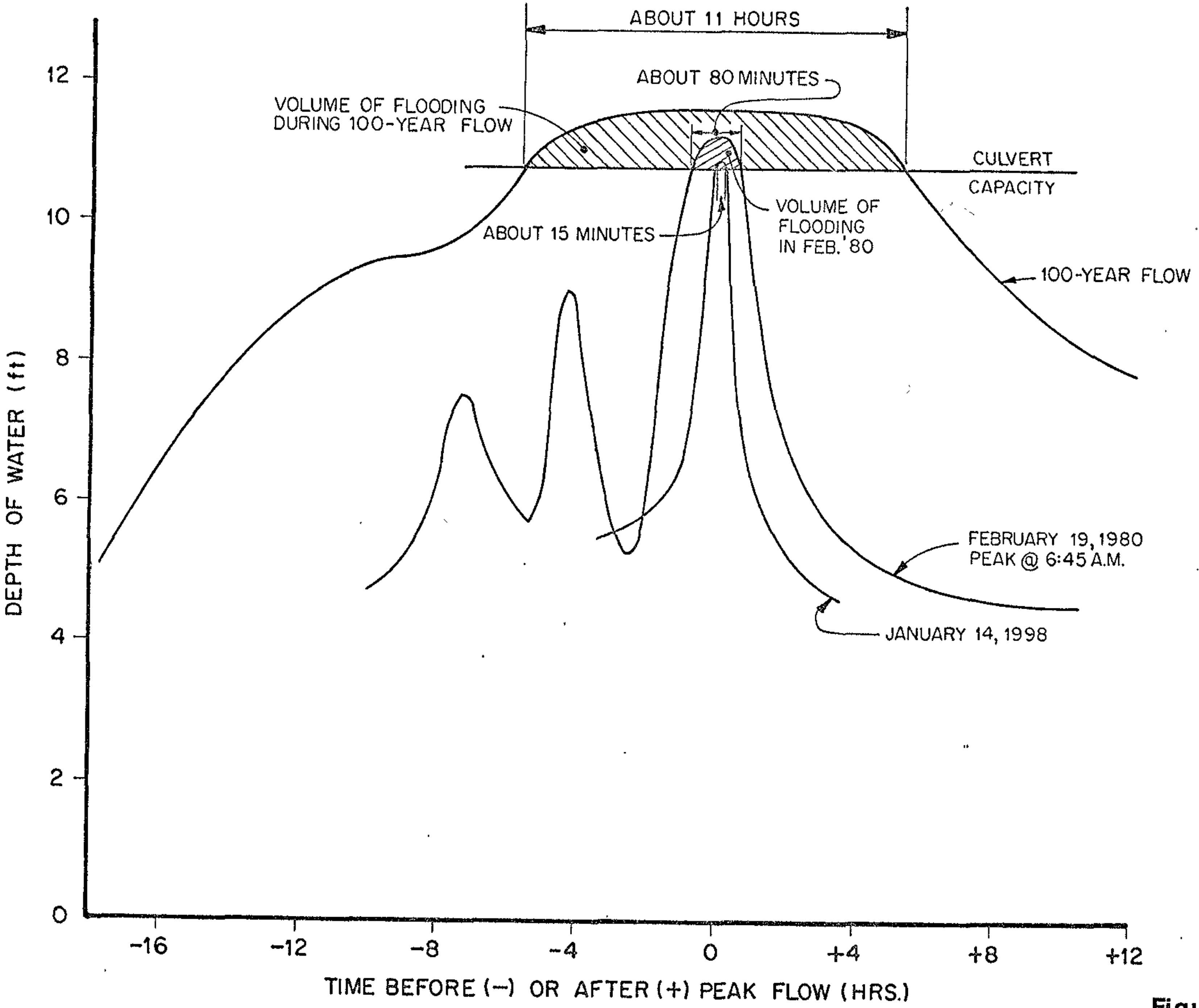


Figure 5

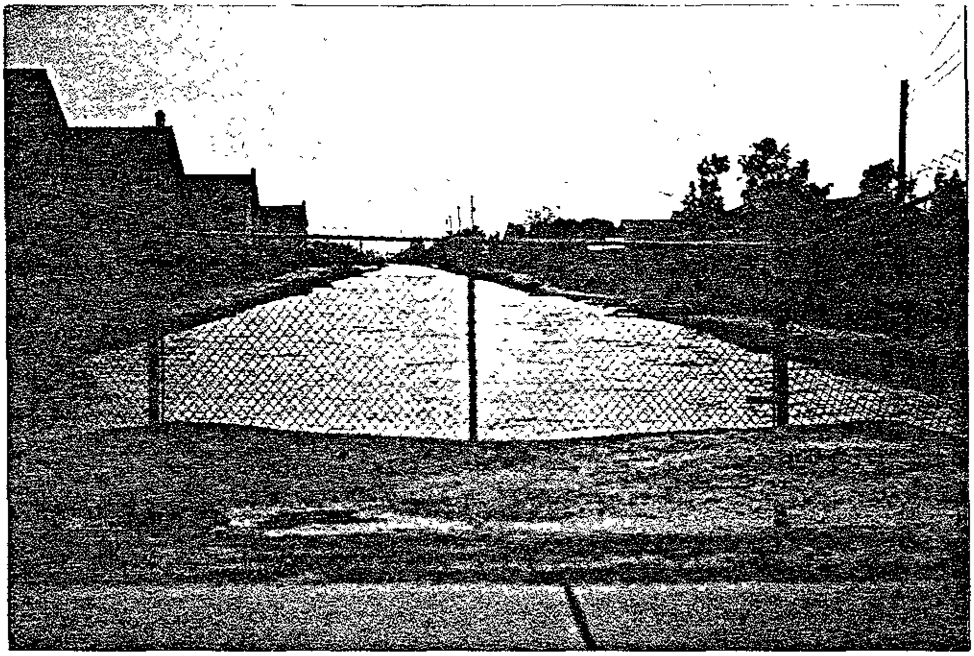
Streamgage #51 also shows that the maximum water surface elevation for the February, 1980 storm was higher, even though the flow was probably almost the same (1,100 cfs) for both storms because of channel constrictions upstream. This difference in maximum water surface elevation is confirmed by the photographs in Figure 3 in which the height of the debris in the fence left by the flooding was higher for the February, 1980 storm. One reason for this difference may have been that, during the February 19, 1980 storm, the Guadalupe River was sufficiently high to effect the Almaden Expressway culvert and cause a backwater extending into Ross Creek up to Cherry Avenue. (Photo Number 3 in Figure 6 was taken at 7:00 a.m. on February 19, 1980, fifteen minutes after the peak in Ross Creek.)

One Percent Event

During the one percent event, flooding would occur first at the Cherry Avenue culvert. The capacity of the culvert is approximately 900-1,100 cfs, depending on the tailwater condition created by the water surface in the Guadalupe River. The frequency of flooding is three to four years (Figure 7). The extent of flooding, defined by the Federal Insurance Administration, is shown in Figure 4. Nearly 90 homes would be impacted. Much of the water that leaves the channel at Cherry Avenue flows south along Cherry Avenue, east on Montmorency Avenue parallel to the creek and then returns to combine with the flow in the creek.

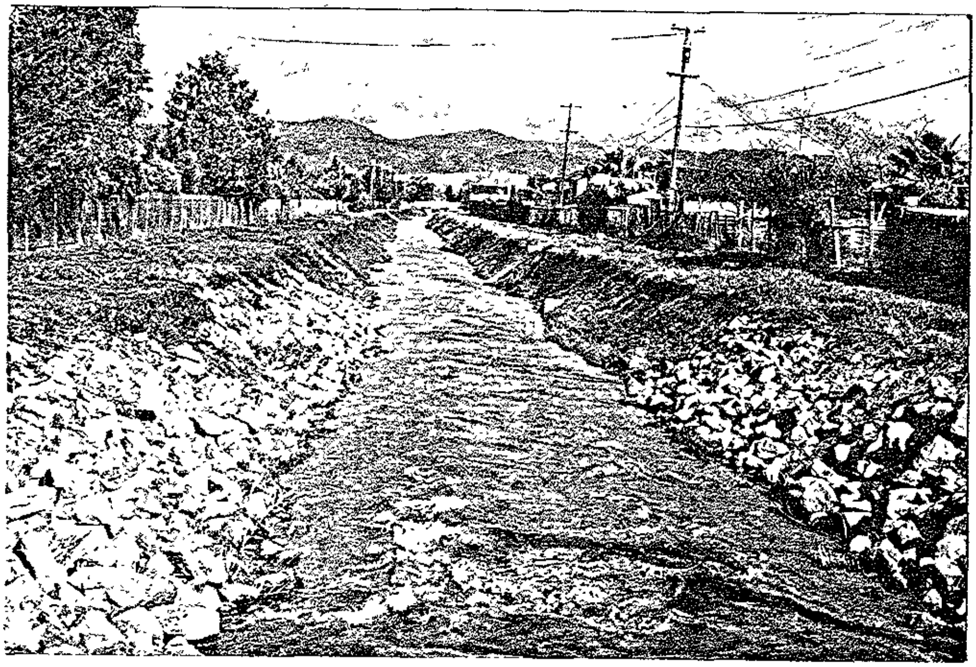
When flows in the one percent event exceed 1,100 cfs, flooding begins to occur at the culvert at Jarvis Road (upstream of Cherry Avenue). The culvert at Jarvis Road restricts the flow in the channel such that, for anything greater than a four-year event, the flow arriving at Cherry Avenue will be 1,100 cfs. The duration and magnitude of the one percent flood would be much greater than the 1978 or 1980 events, as is illustrated in Figure 5.

Figure 6



Photograph 3

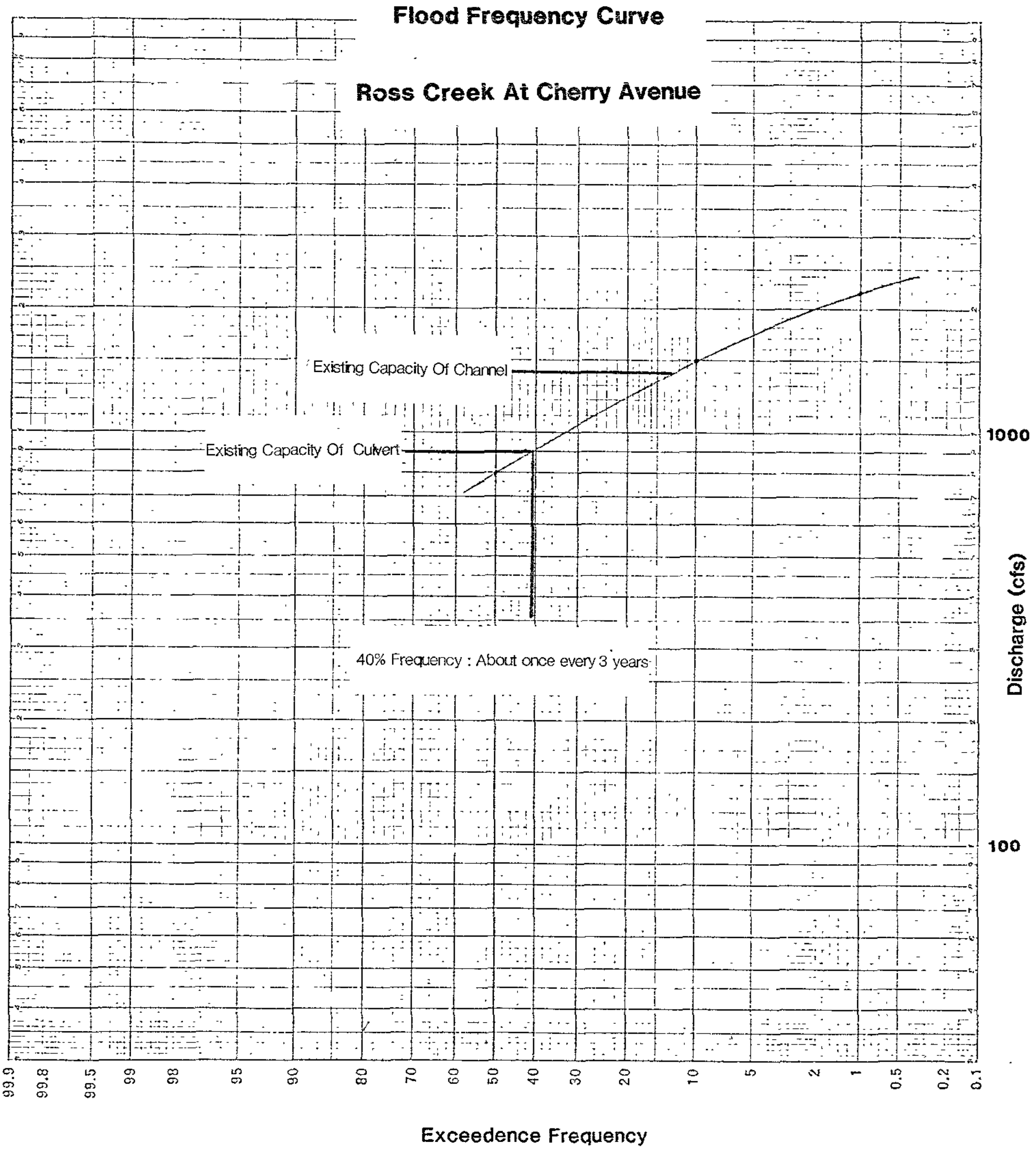
Looking upstream from the Almaden Expressway culvert toward Cherry Avenue at 7 a.m. February 19, 1980.



Photograph 4

Looking downstream from Cherry Avenue after the February 19, 1980 storm. Note bank full condition evident by high water line in grass areas.

Figure 7


Flood Frequency Curve
Ross Creek At Cherry Avenue
Existing Capacity Of Channel
Existing Capacity Of Culvert
40% Frequency : About once every 3 years
1000
100
Discharge (cfs)
99.9
99.8
99.5
99
98
95
90
80
70
60
50
40
30
20
10
5
2
1
0.5
0.2
0.1
Exceedence Frequency

ALTERNATIVE SOLUTIONS

This section discusses alternatives which would enlarge the culvert at Cherry Avenue to enable it to pass flood flows.

Design Constraints

The alternatives selected must conform to the following design constraints:

Design Flow

Any alternative at Cherry Avenue should be compatible with all possible future projects. The one percent design flow for all alternatives is 2,200 cfs.

Freeboard

The alternatives must have at least one foot of freeboard at design flow and have some freeboard under existing conditions.

Maximum Increase in Elevation of Cherry Avenue

Currently, Cherry Avenue slopes up to the bridge over Ross Creek from both sides of the creek. The elevation of the high point in the road over the bridge is estimated to be 1.5 feet above the elevation of Cherry Avenue at a point 100 feet away from the center of the bridge. Staff from the City of San Jose have indicated they would not want to raise the road profile significantly because the roadway over Ross Creek is already elevated.

Right of Way

The existing District right of way is 70 feet wide. The right of way is bordered on each side by single family detached homes. All alternatives and future channel modifications take place within the existing right of way.

Alternatives

Since flooding at Cherry Avenue is caused by an inadequate culvert under Cherry Avenue, a preliminary investigation was made of culvert geometries that would increase the capacity at this location. Each geometry was evaluated to determine how well it would perform under both existing conditions and possible future conditions when the capacity of Ross Creek has been increased. The alternatives were narrowed to the following: replace the existing culvert entirely with either a clear span bridge or two parallel box culverts or retain and augment the existing culvert by adding a new box on one side of the existing culvert.

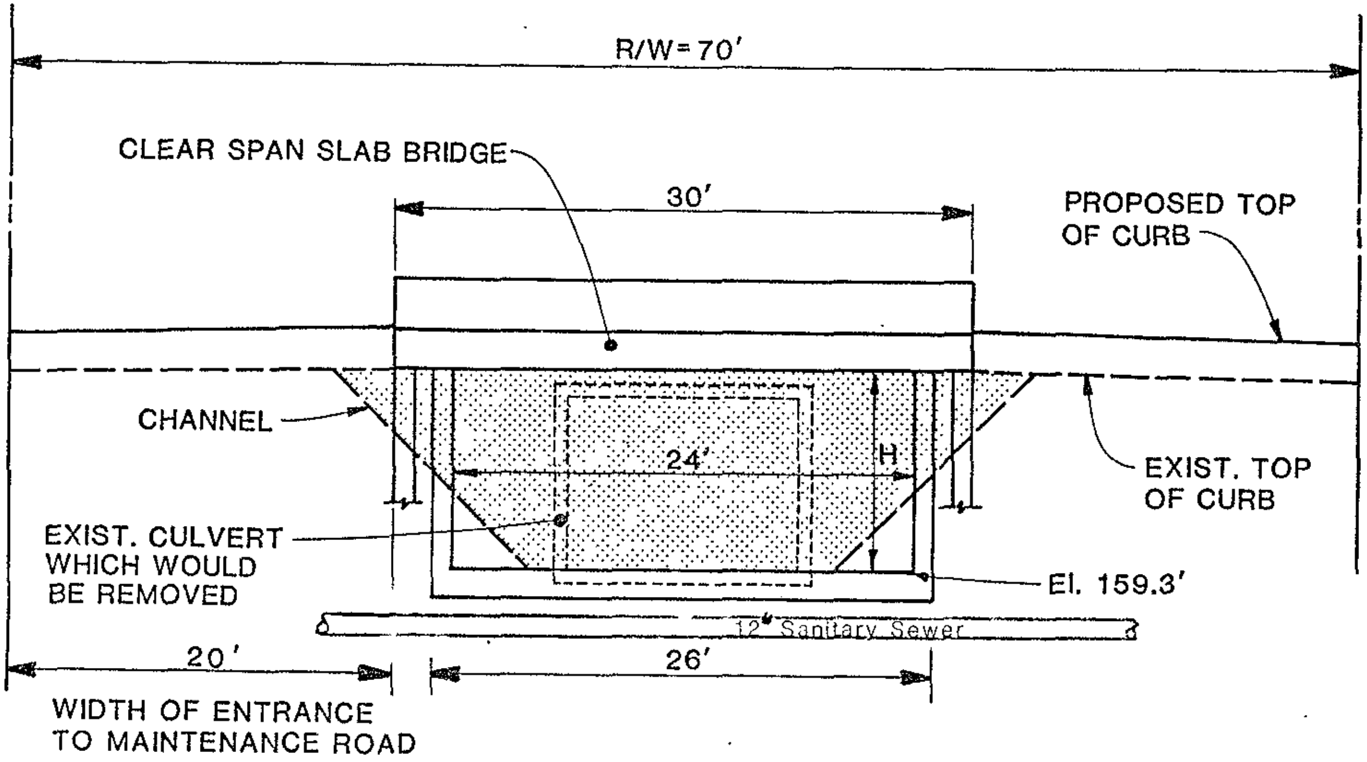
Alternative 1 - Replace Existing Culvert with Clear Span Bridge

The alternative assumes that the existing culvert will be removed. The new culvert will be a 30-foot-long free span bridge over a 24-foot-wide, 9.3 foot high channel section. An elevation view looking downstream for this alternative is shown in Figure 8. The existing inlet and outlet transitions would be removed and replaced. This alternative can be implemented without purchasing additional right of way. The entrance to the maintenance road would be 20 feet wide at the culvert and would narrow to 17 feet at the ends of the transition structures. There would be a minimum of 1.75 feet above the bridge soffit (elevation 168.5) to the crown of the road. The road elevation would be raised less than one-half foot above existing grade. Some reestablishment of landscaping may be required on adjacent properties.

Alternative 2 - Replace Existing Culvert with Two Box Culverts

This alternative assumes that the existing culvert is removed and replaced with two parallel 12-foot-wide, 9.3-foot-high box culverts. An elevation view of this alternative looking downstream is shown in Figure 9. The existing inlet and outlet transition will be removed and replaced. This alternative can be implemented without purchasing additional right of way. The entrance to the maintenance road would be 21 feet at the culvert and narrow down to 17 feet at the end of the transition. The increase in road elevation would be less than one-half foot. Some reestablishment of landscaping may be required on adjacent properties.

ALTERNATIVE 1 - REPLACE EXISTING CULVERT WITH CLEAR SPAN BRIDGE



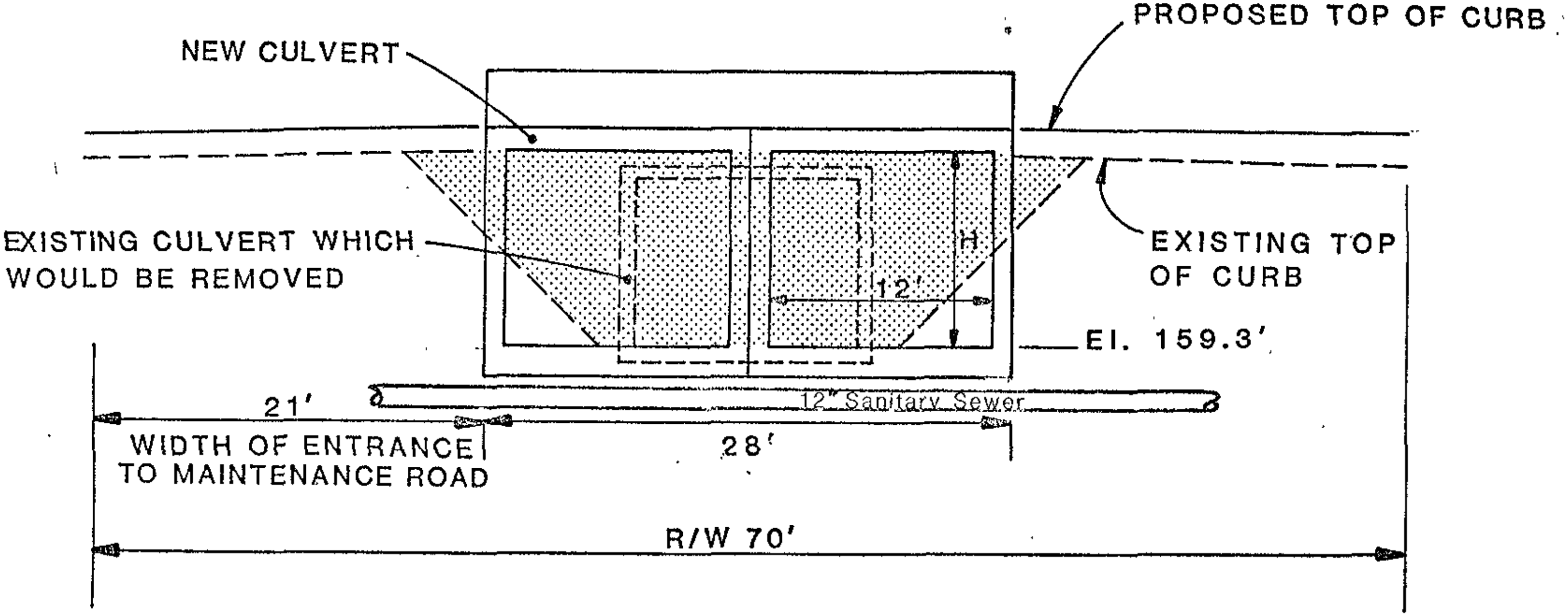
MAXIMUM ROAD PROFILE ELEVATION=170.5'

MINIMUM SOFFIT ELEVATION=168.5'

MAXIMUM INVERT ELEVATION=159.3'

Figure 8

ALTERNATIVE 2 - REPLACE EXISTING CULVERT WITH TWO PARALLEL BOX CULVERTS



MINIMUM SOFFIT ELEVATION=168.5'

MAXIMUM INVERT ELEVATION=159.3'

Figure 9

Alternative 3 - Retain and Augment Existing Culvert

In this alternative, a 9.3-foot-high by 12-foot-wide culvert would be added on one side of the existing culvert. The existing culvert will not be removed. This alternative is shown in Figure 10. Some of the existing inlet and outlet transition structures at Cherry Avenue will be removed and replaced. This alternative can be implemented without purchasing additional right of way. The entrance to the maintenance road on the side where the new cell is added would be about 14 feet at the culvert on the side where the new culvert is added and widen to the existing 17 feet adjacent to the channel. The roadway would need to be raised less than one-half foot. Some reestablishment of landscaping may be required on adjacent properties.

Evaluation of Alternatives

A summary of the three alternatives and their advantages and disadvantages is presented in Table 3.

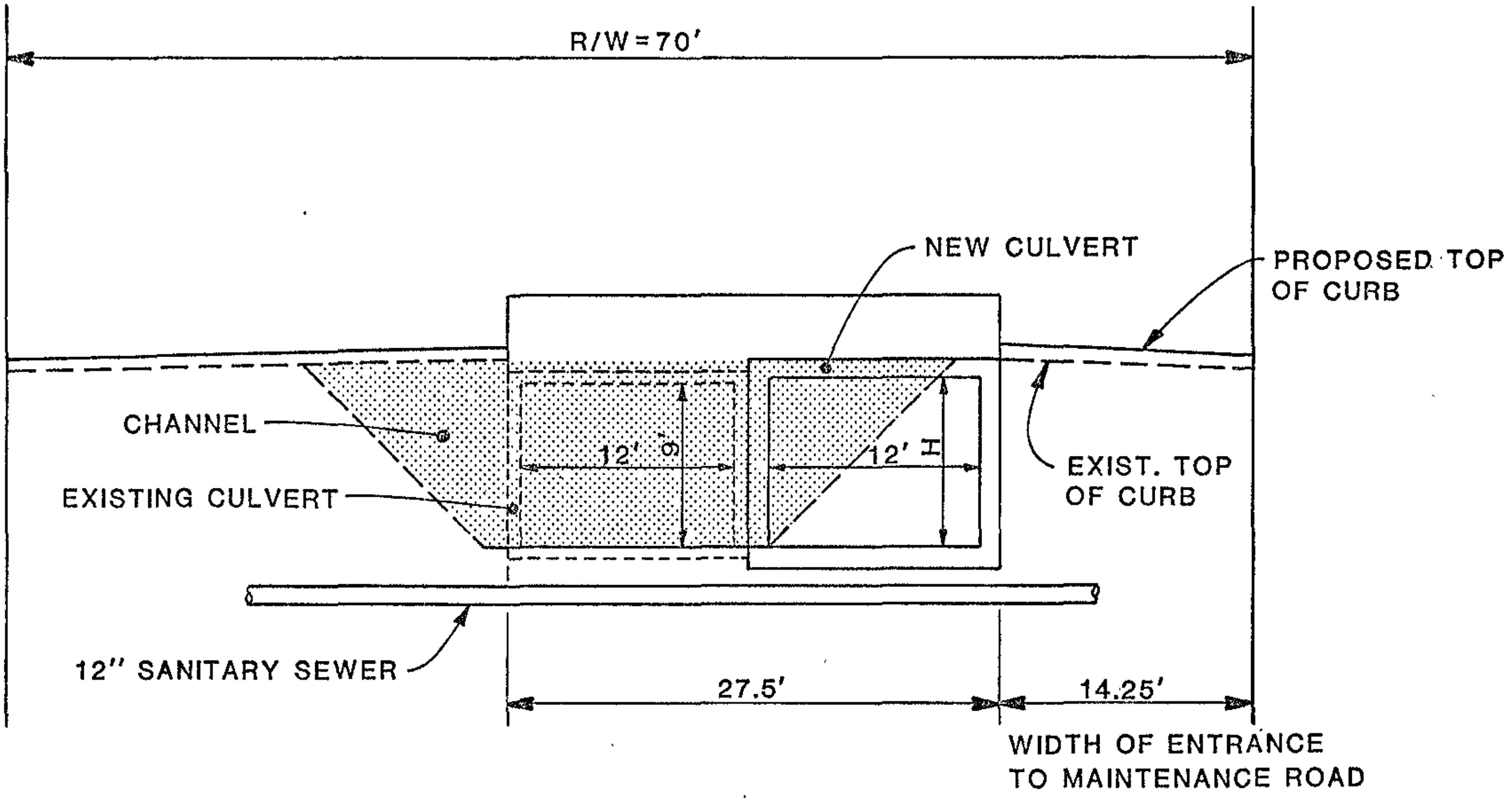
Elimination of Flooding

All alternatives will eliminate flooding at Cherry Avenue for the 100-year flow in Ross Creek. In the 1% event, with existing channel conditions, a flow of 1,100 cfs and the highest probable water surface elevation in the Guadalupe River, the flow would submerge the culvert opening and pressure flow would occur in the culvert. However, since the cross sectional area of the proposed culvert would be more than twice the area of the existing culvert, the water surface elevation upstream of the culvert would only be about seven inches above the elevation of the culvert soffit and no flooding would occur. In the future, if the channel capacity in Ross Creek is increased to 2,200 cfs and the Guadalupe River water surface is lowered, all the alternatives would pass the flow with a foot or more of freeboard.

Debris Buildup

Generally, culverts that have no structures in the channel are preferred because any structure in the channel can be a location at which debris, being carried by the floodwaters, can lodge, collect and obstruct the flow to the point where flooding occurs.

ALTERNATIVE 3 - RETAIN AND AUGMENT EXISTING CULVERT



MINIMUM SOFFIT ELEVATION = 168.5'

MAXIMUM INVERT ELEVATION = 159.3'

Figure 10

TABLE 3

Comparison of Alternative Projects to Solve Flooding Problems In Ross Creek Upstream of Cherry Avenue

	Alternative 1 Replace Existing Culvert With Clear Span Bridge	Alternative 2 Replace Existinig Culvert With Two Parallel Box Culverts	Alternative 3 Retain & Augment Existing Culvert
Description	Remove existing culvert. Replace with a 24-foot wide, 9.2 foot high rectangular channel section and a 30 foot free span slab bridge.	Remove existing culvert. Replace with two parallel 12-foot wide, 9.2-foot high concrete box culverts.	Keep existing culvert. Add a new culvert that is 12 feet wide and 9.2 feet high.
Cost			
Capital*	$465,780	$418,790	$258,170
O&M	Approximately $0	Approximately $0	Approximately $0
Pros/Cons			
Cost	Most costly solution		Least costly solution.
Flooding	Eliminates flooding for 100-year flow.	Eliminates flooding for 100-year flow.	Eliminates flooding for 100-year flow.
Access	Initial access to creekside maintenance road is 22 feet wide.	Initial access to creekside maintenance road is 19 feet wide.	Initial access to creekside maintenance road is 16 feet wide.
Maximum Elevation of Cherry Avenue	Raises elevation of road less than 1/2 foot.	Raises elevation of road less than 1/2 foot.	Raises elevation of road less than 1/2 foot.
Impacts/Effects	No significant long term environmental impact other than requiring a small elevation of Cherry Avenue close to bridge.	No significant long term environmental impact other than requiring a small elevation of Cherry Avenue close to the bridge.	No significant long term environmental impact other than requiring a small elevation of Cherry Avenue close to bridge.

* Estimated costs April 1982

Maximum Elevation at Cherry Avenue

The roadway of Cherry Avenue will be raised for each of the alternatives. The maximum increase in grade will be less than one-half foot. In Alternatives 1 and 2, the road, curb, gutter and sidewalk will have to be removed and replaced at a different grade for about 70 feet north and south of the boundary of the District right of way. The street and sidewalk construction will affect four properties. Augmenting the existing culvert (Alternative 3) would limit the construction activity to the channel and the area immediately to the south. Only two properties may be affected by this alternative.

Estimated Costs

For each alternative, a preliminary plan, a list of work and materials and a construction cost estimate, was prepared. These estimates, including all costs for labor and materials are summarized in Table 3. No right of way would need to be acquired for this project.

Environmental Impacts

Flood flows that leave the Ross Creek channel at Cherry Avenue flow down Montmorency Drive and reenter the channel downstream of Cherry Avenue causing the downstream flow to be about equal to the flow upstream of Cherry Avenue. Preventing the flooding at Cherry Avenue will not significantly increase downstream flows in Ross Creek; no additional flooding downstream will be induced by this project.

It has been established that none of the alternatives will have any significant environmental impact, except for temporary nuisances during construction. A Categorical Exemption for this project is in Appendix E.

floodwaters, can lodge, collect and obstruct the flow to the point where flooding occurs.

Maximum Elevation at Cherry Avenue

The roadway of Cherry Avenue will be raised for each of the alternatives. The maximum increase in grade will be less than one-half foot. In Alternatives 1 and 2, the road, curb, gutter and sidewalk will have to be removed and replaced at a different grade for about 70 feet north and south of the boundary of the District right of way. The street and sidewalk construction will affect four properties. Augmenting the existing culvert (Alternative 3) would limit the construction activity to the channel and the area immediately to the south. Only two properties may be affected by this alternative.

Estimated Costs

For each alternative, a preliminary plan, a list of work and materials and a construction cost estimate, was prepared. These estimates, including all costs for labor and materials are summarized in Table 3. No right of way would need to be acquired for this project.

Environmental Impacts

Flood flows that leave the Ross Creek channel at Cherry Avenue flow down Montmorency Drive and reenter the channel downstream of Cherry Avenue causing the downstream flow to be about equal to the flow upstream of Cherry Avenue. Preventing the flooding at Cherry Avenue will not significantly increase downstream flows in Ross Creek; no additional flooding downstream will be induced by this project.

It has been established that none of the alternatives will have any significant environmental impact, except for temporary nuisances during construction. A Categorical Exemption for this project is in Appendix E.

Alternative Selected

The alternative selected for this project is Alternative 3 - adding a second cell to the existing culvert. This is the lowest cost alternative.

Financing and Scheduling

The budget for fiscal year 1981-82 includes funds for design and construction of this project. Construction is scheduled to start in the Spring of 1982.

CONCLUSIONS

There is a definite flood problem on Ross Creek caused by the inadequate culvert at Cherry Avenue. The residents in this area have already experienced flooding and are subject to an even greater hazard.

Flooding can be expected to occur at Cherry Avenue on an average of once every four years because of the undersize culvert and the backwater effect of the Guadalupe River.

Enlargement of the culvert at Cherry Avenue, either by replacing the existing culvert or by adding to it, will prevent flooding under existing conditions. Any of the proposed projects would be compatible with possible future channel work.

Enlargement of the culvert will not induce additional flooding downstream at Cherry Avenue.

The District is able to fund construction of this project this fiscal year.

RECOMMENDATIONS

1. The existing culvert under Cherry Avenue be augmented by adding a second cell (Alternative 3).

2. This project should be designed and constructed this fiscal year.

APPENDICES

APPENDIX A

COSTS

The detailed cost estimates for the three alternatives in the text are given in Tables A-1 through A-3. Unless otherwise noted costs are in June 1981 dollars.

Cost Estimate

Alternative 1

Replace Existing Culvert with Clear Span Bridge

Roadway				
Remove existing	3,450 SF	@	$2/SF	$6,900
Install new	13,000 SF	@	$3/SF	39,000
Sidewalk				
Remove existing	1,600 SF	@	$2/SF	3,200
Install new	1,600 SF	@	$3/SF	4,800
Curb and Gutter				
Remove existing	400 LF	@	$1.75/LF	700
Install new	400 LF	@	$6.75/LF	2,700
Remove existing concrete structures	150 CY	@	$100/CY	15,000
Excavation	1,170 CY	@	$12/CY	14,040
Free Span Slab Bridge	2,700 SF	@	$40/SF	108,000
Structural Concrete	279 CY	@	$400/CY	111,600
Landscaping	Lump Sum			3,000
Mobilization & traffic control	Lump Sum			20,000
Subtotal				$328,940
Contingencies (20%)				65,790
Total Capital Cost				*$394,730
Engineering (8%)				31,580
Supervision & Administration (10%)				39,470
Total (In June, 1981 dollars)				$465,780

*Cost in April, 1982, when bids will be received, is $434,200.

Cost Estimate

Alternative 2

Replace Existing Culvert with Two Box Culverts

Roadway				
Remove existing	3,700 SF	@	$2/SF	$7,400
Install new	13,000 SF	@	$3/SF	39,000
Sidewalk				
Remove existing	1,600 SF	@	$2/SF	3,200
Install new	1,600 SF	@	$3/SF	4,800
Curb and Gutter				
Remove existing	400 LF	@	$1.75/LF	700
Install new	400 LF	@	$6.75/LF	2,700
Remove existing concrete structures	150 CY	@	$100/CY	15,000
Excavation	1,330 CY	@	$12/CY	15,960
Free Span Slab Bridge	0 SF	@	$40/SF	0
Structural Concrete	460 CY	@	$400/CY	184,000
Landscaping	Lump Sum			3,000
Mobilization & traffic control	Lump Sum			20,000
Subtotal				$295,760
Contingencies (20%)				59,150
Total Capital Cost				*$354,910
Engineering (8%)				28,390
Supervision & Administration (10%)				35,490
Total (In June, 1981 dollars)				$418,790

*Cost in April, 1982, when bids will be received, is $390,400

Cost Estimate

Alternative 3

Retain and Augment Existing Culvert

Roadway				
Remove existing	2,800 SF	@	$2/SF	$5,600
Install new	8,900 SF	@	$3/SF	26,700
Sidewalk				
Remove existing	1,000 SF	@	$2/SF	2,000
Install new	1,000 SF	@	$3/SF	3,000
Curb and Gutter				
Remove existing	270 LF	@	$1.75/LF	480
Install new	270 LF	@	$6.75/LF	1,820
Remove existing concrete structures	7.2 CY	@	$100/CY	720
Excavation	950 CY	@	$12/CY	11,400
Free Span Slab Bridge	0 SF	@	$40/SF	0
Structural Concrete	269 CY	@	$400/CY	107,600
Landscaping	Lump Sum			3,000
Mobilization & traffic control	Lump Sum			20,000
Subtotal				$182,320
Contingencies (20%)				36,470
Total Capital Cost				*$218,790
Engineering (8%)				17,500
Supervision & Administration (10%)				21,880
Total				$258,170

*Cost in April, 1982, when bids will be received, is $240,670

APPENDIX B
CATEGORICAL EXEMPTION

SANTA CLARA VALLEY WATER DISTRICT

NOTICE OF EXEMPTION

Name of Project

Cherry Avenue Culvert Enlargement

Location

Ross Creek at Cherry Avenue, San Jose

Description of Nature, Purpose and Beneficiaries of Project

Existing culvert will be augemented with a second box culvert cell. The existing culvert is a constriction, causing water to leave the channel upstream of the culvert. This project will prevent localized flooding by allowing the 1% flow to pass under the bridge. The beneficiaries are all the home owners in the area currently subject to flooding.

Name of Public Agency Approving Project

Santa Clara Valley Water District

Exempt Status: (Check one)

______ Ministerial (Section 9)

______ Declared Emergency (Section 41)

______ Emergency Project (Section 41 (b) and (c)

__X__ Categorical Exemption (Section 49). State type and section number.

Class III: New construction

Reasons Why Project is Exempt

The only adverse effects of the project are temporary traffic delays and other construction related impacts.

Contact Person	Phone
Dr. Bernard H. Goldner Environmental Specialist	(408) 265-2600

John T. O'Halloran
General Manager

Date: 9/4/81

By: ____________
Flood Control Manager

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